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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,942

03/30/2004

Vladimir Pentkovksi

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7590

04/06/2006

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EXAMINER

SCHLIE, PAUL W

ART UNIT

PAPER NUMBER

2186

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/813,942		PENTKOVKSI ET AL.	
	Examiner		Art Unit	
	Paul W. Schlie		2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some. * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-38 have been examined.

Specification

2. The specification is objected to because it's not clear from the disclosure what the purpose and utility of the disclosed invention is, as although the disclosure cites the invention enables read/request-for-ownership (RFO) requests to be issued prior to it's corresponding store operation being globally observed, no such restriction logically exists as RFO may inherently be requested at any time in any sequence prior to its anticipated requirement, and typically is itself the means by which a pending store is made globally observable. Thereby although a corresponding amendment to the specification is not required, it is suggested that it be considered to improve its clarity and motivation.

Drawings

3. The drawings are objected to, as minimally elements 415 and 425 of figure 4, as referenced within paragraph [0020] of the disclosure are absent from the drawing. The examiner asks the applicant's assistance in correcting all remaining such abnormalities, and ideally verbally label drawing features in addition to their numbering so that they may be more easily understood. Corrective action is required.
4. The drawings are objected to under 37 CFR 1.83(a) because they fail to depict the necessary structural implementation and/or protocol detail essential for the proper understanding of the disclosed invention; see MPEP § 608.02(d).

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More specifically, although example logical content of a local and globally visible store queue/buffer (cache) has been depicted, the drawings are considered to lack sufficient detail necessary to enable the understanding of how the claimed invention functionally and correspondingly structurally differs from otherwise well understood local or global cache implementations maintaining ownership tags based upon global read/request-for-ownership (RFO) requests and/or corresponding grants typically utilized to maintain local cache coherence within multi-processor distributed cache implementations; and must show every feature of the invention specified in the claims. Therefore, a sufficiently detailed depiction of a processor comprising the structural means and coupling of a first and second storage unit and bus agent must be shown or the feature(s) canceled from the claim(s). The applicant is reminded that no new matter may be added.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended drawing sheets should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

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application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-38 are rejected per 35 U.S.C. 112, first paragraph, as based on a disclosure that is not enabling. As elements critical or essential to the practice of the invention, are neither included in the claims nor enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

More specifically, as no method, means, or corresponding structure as presumed to be required to enable subsequent loads which may correspond to the stores which were alternatively chosen to be spilled into a globally visible non-committed store queue and/or corresponding buffer (cache) in lieu of the local cache (also presumably needing to maintain global coherency) may be subsequently globally resolved; and no structure nor corresponding methods presumably needed to maintain coherency between potentially multiple processor local caches and said globally visible queue/buffer (cache) as presumed to be the context of the claimed invention has been disclosed; Thereby lacking critical elements necessary to enable one of ordinary skill in the art to make and/or use the claimed invention without undue experimentation.

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Corrective action is required, however the applicant is reminded that no new matter may be added not supported by the original disclosure.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

8. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. As it is not clear what is intended by claiming a computer system wherein the first bus agent comprises an apparatus chosen from a list. Clarification is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 8, 18, 27 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Witek et al. (5,043,886).

As per independent claims 1, 8, 18, 27 and 31, Witek et al. teaches a system and/or methods comprising a processor which may contain a first storage unit (store queue, as typical of most processors), a second storage unit (local cache, as also typical of most processors), such that values stored in the first storage unit may be stored in the second storage only after the value has become detectable (by virtue of

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the fact that a value may only be stored in the local cache after ownership has been granted after a corresponding request for global read/request-for-ownership (RFO) of said data if not the owner at any time prior upon determining it's requirement) and thereby it's modified value may be coherently globally detectably known to be potentially modified through a global snooping interface (bus agent) monitoring such FRO requests by arbitrary other processor/cache's (bus agent) requirement of the same (see figures 1-4 and column 2 lines 43-68); where all corresponding logic is considered inherent in the methods disclosed and who's implementation is considered obvious to one of ordinary skill in the art at the time of the disclosed invention.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2-7, 9-17, 19-25, 28-30 and 32-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witek et al. (5,043,886).

As per claims 2-7, 9-17, 19-25, 28-30 and 32-38 being dependent on claims 1, 8, 18, 27, 31, or correspondingly dependant claim inclusively as taught by Witek et al. and detailed above, comprising a first storage location (claim 5, store queue FIFO) storing data potentially not yet observable to a bus agent (claim 6) prior to a corresponding RFO request being issued and granted (claim 2), where a store queue may be considered a cache (claim 4) comprising a line-fill buffer (claim 3), and a second storage

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unit may be considered a buffer (cache) may be obviously configured by one of ordinary skill in the art to maintain a count the number of presently queued but not yet globally observable pending store requests associated with any presently similarly cached value for the benefit of enabling more efficient cache line allocation management, claims 2-7 are rejected. Where further as claims 9-17, 19-25, 28-30 and 32-38 are considered to reflect claims 2-7 in other form or being non-otherwise patentably distinguishable, they are correspondingly rejected per the same arguments as presented above.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul W. Schlie whose telephone number is 571-272-6765, or whose email address is [paul.schlie@uspto.gov]. The examiner can normally be reached on Mon-Thu 8:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 517-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


PIERRE BATAILLE
PRIMARY EXAMINER
4/2/06